(Williams, 1938, at p. 445), and one to the east in July 1922 witnessed by Tulloch at Deolali (Williams, 1938, at p. 449). My observations showed rises in February and September, but no mass movement.

49, Pali Hill,
Bandra, Bombay 50, D. E. REUBEN
*October* 29, 1960.

References

Aitken, E. H. (1897) : The migration of butterflies. *J. Bombay nat. Hist. Soc.* **11** : 336-7.
——— (1898) : Migration of *Euploea core*. ibid. **12** : 229-30.
——— (1901) : Butterflies as weather prophets. ibid. **13** : 540-1.
Andrewes, H. N. (1909) : Migration of butterflies. ibid. **19** : 271.
Davidson, J. & Aitken, E. H. (1890) : Notes on the larvae and pupae of some of the butterflies of the Bombay Presidency. ibid. **5** : 260-78.
Prall, S. E. (1898) : Speed of flight in butterflies. ibid. **11** : 533.
Wall, F. (1921) : Butterflies at sea. ibid. **28** : 293.
Williams, C. B. (1938) : The migration of butterflies in India. ibid. **40** : 439-57.

## 19. *PLUSIA (PHYTOMETRA) NI* HB. (NOCTUIDAE) AS A PEST OF CABBAGE, *BRASSICA OLERACEA*, IN SOUTH INDIA

For the past few years a green semilooper, *Plusia ni* Hb., has been found to inflict serious damage on the crop of cabbage (*Brassica oleracea*) in Madurai district. Since the insect has been noted for the first time in south India as a serious pest on cabbage, a crop which is grown on a commercial scale on the hills and in the plains, a short account of it is given in this paper.

DISTRIBUTION. Hampson (1894) has given San Domingo, Europe, St. Vincent (Cape Verde Is.), Aden, Japan, China, and north-west India as its distribution. Fletcher has stated that it occurs throughout India, but the records of its occurrence extend only to Pusa, Lahore, Surat, Kumbharia (Bombay), United Provinces, Gujarat (Fletcher, 1921), and Dehra Dun (Gardner, 1947).

It is of interest to note that Fletcher (1921) has recorded a few species of the genus *Plusia (Phytometra)* as occurring on cabbage in N. India; they are *Plusia ni* Hb. in Surat and Kumbharia (Bombay), *P. chalcytes* Fb. in Kumbharia (Bombay), *P. orichalcea* Fb. in Poona, Nagpur, Pusa, etc., and *P. signata* Fb. in Bihar, but he is doubtful about the correct identification of the last named species.

FOOD PLANTS. Larvae of *Plusia ni* Hb. were noted on cauliflower in Pusa and Lahore, on cabbage in Surat and Kumbharia

(Bombay), on opium poppy in United Provinces and Gujarat, and on safflower, nettle, and *Solanum* (Fletcher, 1921). In the insect collections at the Agricultural College and Research Institute, Coimbatore, it is seen that a few specimens have been collected on Sunflower (*Helianthus annuus*) at Coimbatore by R. N. Chari in 1923. Gardner (1947) has noted the larvae on *Antirrhinum*, cabbage, and tomato in Dehra Dun. The insect has now been noted to be a severe pest of cabbage in Madurai district (Madras State), and it has not been observed to feed on any other plant in this locality.

NATURE OF DAMAGE AND SEASONAL OCCURRENCE. During the last 4½ years this insect has been found to appear regularly from September to April on cabbage in Periyakulam, parts of Tirumangalam, Nilakottai, and Dindigul taluks of Madurai district, where cabbage is grown on a commercial scale in about 2000 acres (*c.* 800 hectares). The caterpillars appear both in the nursery and on the planted crop, and eat away the leaves leaving only the veins and midribs. In severe cases the crop had to be ploughed in. The damage is marked when the caterpillars attack the crop at the time of formation of heads. About 30-60% of the yield is affected.

Since the insect has assumed serious proportions in this area and the other common pests of this crop are not known to cause such severe damage it is considered to be of major economic importance for cabbage.

LIFE-HISTORY. The female moth lays greenish white, spherical, sculptured eggs singly on the undersurface of the leaves. The caterpillar is slender and attenuated anteriorly and moves as a semilooper. It feeds gregariously on the leaves and when full-grown measures about one-and-a-half inches (*c.* 38 mm.) in length and is green in colour with light wavy white lines and a broader lateral stripe. It pupates on the undersurface of the leaves in a thin transparent silken cocoon.

The moth is stout, brown in colour, with light wavy markings and with a more slender Y-mark on the forewings.

NATURAL ENEMIES. So far no parasites or predators have been noted on this insect in this locality.

CONTROL. The widespread attack by this pest made the cultivators try control with chemicals. In the early years, the cultivators either dusted with 5% DDT or sprayed with 0.25% DDT. In course of time as this did not give satisfactory results the cultivators tried spraying Endrex 20 E.C. at 1 oz. (*c.* 28 gr.) in 6¼ gallons (*c.* 28 litres) of water and parathion 0.025% [Folidol 1 oz. (*c.* 28 gr.) in 12½

gallons (*c.* 56 litres) of water]. As these chemicals control the pest and the plant lice as well, these methods are widely followed by the cultivators. They have been advised to handle the chemicals with care as they are poisonous and to stop the application a month before the harvest of the crop to eliminate residue hazards. An insecticidal trial with a view to control the pest effectively without any residual effect, as it is a vegetable crop, is worth pursuing.

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POST-GRADUATE TRAINING CENTRE,
COIMBATORE-3, B. VASANTHARAJ DAVID
*August* 2, 1960.

## REFERENCES

Gardner, J. C. M. (1947) : *Trans. R. ent. Soc.* London **98** : 59-89.

Fletcher, T. B. (1921) : Annotated List of Indian Crop Pests. *Pusa Bulletin* **100** : 40-43.

Hampson, G. F. (1894) : The Fauna of British India, Moths **2** : 570.

## 20. *SYNGAMIA ABRUPTALIS* WALKER (PYRALIDAE—LEPIDOPTERA): A NEW PEST OF *MENTHA VIRIDIS* L. IN SOUTH INDIA

### INTRODUCTION

*Mentha viridis* L. (Labiatae) (Tam. *Podina*) is a small perennial herb commonly grown in kitchen gardens and used for seasoning many culinary preparations. The thick, fleshy leaves are used for making *chutneys*, for flavouring soups, salads, etc. It has a medicinal value and has been used for curing hysteria and some infantile troubles. So far no insect has been noted as doing any marked damage to the plant. Recently, however, the caterpillars of